What is claimed is:

1. A device for reducing vibration in a section of material, said vibration causing an acoustic disturbance in a range of frequencies detectable by a target, the device comprising:

an active damper comprising an electroactive element in electrical communication with an electrode, the active damper located a first distance from said section of material;

a passive damper comprising a sound reducing material, said passive damper located a second distance from said section of material,

wherein said second distance is greater than said first distance, and wherein at least one of the active damper and the passive damper reduces the magnitude of the acoustic disturbance reaching the target.

2. The device of claim 1, further including a constraining layer disposed in contact with said passive damper.

3. The device of claim 2, wherein the constraining layer is aluminum.

4. The device of claim 1, wherein the active damper further comprises a flexible insulator upon which said electrode is disposed.

5. The device of claim 4, wherein the electroactive element is bonded to the insulator so that in-plane strain in said electroactive element is effectively shear coupled between said electroactive element and said flexible insulator.

6. The device of claim 1, wherein said active damper damps low frequency acoustic disturbances and said passive damper damps high frequency acoustic disturbances.

7. The device of claim 1, wherein the sound reducing material comprises a viscoelastic material.

8. The device of claim 1, wherein said viscoelastic material is selected from the group of viscoelastic materials consisting of: 3M Damping Foil, Soundcoat Soundfoil, EAR Tad Pad and Sorbothane.

9. The device of claim 1, wherein said active damper is in mechanical contact with said section of material.

10. The device of claim 1, further comprising a protective, insulating encapsulation layer substantially surrounding the active damper and the passive damper.

11. The device of claim 1, wherein the active damper comprises a QuickPack® actuator.

12. The device of claim 1, wherein the active damper further comprises a compensator including at least one positive position feedback (PPF) filter implemented on a digital signal processor (DSP).

13. The device of claim 2, wherein the total mass of the device does not exceed approximately 50 grams.

14. The device of claim 2, wherein the thickness of the passive damper is about 0.005 inches, the thickness of the constraining layer is about 0.010 inches and the total thickness of the device is about 0.030 inches.

15. A device for reducing audible noise in a vehicle by reducing vibration of a vehicle section, comprising:

an actuator attached to a surface of the vehicle section, the actuator comprising at least one piezoelectric element and at least one electrode;

a viscoelastic portion which is located outside the actuator with respect to the surface of vehicle section; and

a constraining layer having a higher stiffness than said viscoelastic portion;

wherein the at least one piezoelectric element and the at least one electrode are in electrical communication with each other; the constraining layer is in mechanical contact with the viscoelastic layer and wherein the device functions to reduce noise by the actuator damping specific sound modes and by the viscoelastic portion damping all of the sound modes.

16. A method of constructing the device of claim 1, comprising the steps of:

optimizing a dimension of the device by calculating an optimal dimension for said active damper and by calculating an optimal dimension for said passive damper;

modeling the behavior of the device to generate an optimal controller which governs when the active damper is energized and de-energized;

bonding an optimally dimensioned active damper to an optimally dimensioned passive damper; and

connecting the device so that the device in operation can be governed according to the optimal controller.

17. The method of claim 16, wherein the step of optimizing a dimension of the device further includes the step of optimizing an induced strain that the device is theoretically produce on the section of material.

18. A method of damping vibration in a section of material, said vibration causing noise audible to a human ear, comprising the steps of:

bonding an actuator having active damping means and passive damping means to a desired portion of the section of material;

activating the active damping means to damp low frequency vibration in the section of material;

wherein the active damping means and the passive damping means together reduce noise to a greater extent than would be possible if the active damping means or the passive damping means act alone.